Armed Services Technical Information Agency

AD 288 14

UNCLASSIFIED

ANNUAL TECHNICAL REPORT NO. 3

ONR Contract N5 ori - 07646

Laboratory of Social Relations

Harvard University

March 19, 1954

I. INTRODUCTION

Two annual reports have preceded this document. The first one was a programmatic statement made early in the course of our operation. The second was a full report of work, some in progress, some near completion, some not yet begun.

We have, since our Second Report, completed a number of projects, while several more are nearing conclusion. Others, of equally long standing, continue to be refractory and are still in progress. Finally, we have begun some new exploratory studies to clarify points raised by previous work. Work for the coming year is planned with a view to bringing the project to a conclusion by July 1, 1955.

The focus of the work continues to be the inquiry of how people perceive and judge each other, especially in social settings. Three broadly defined forms of inquiry have been undertaken: (1) the study of how impressions of other persons are formed; (2) investigation of factors involved in perceiving or judging the interpersonal preferences

and feelings of others; and (3) the systematization of the literature on the perception of people.

Several investigators have been engaged in the work of the Project, some employed on a part-time, some on a full-time basis, and some working without compensation. These include

Dr. Jerome S. Bruner

Dr. Henry W. Riecken[*]

Dr. Renato Tagiuri

Dr. David Shapiro

Dr. Howard V. Perlmutter (Harvard University and MIT)

Dr. Gardner Lindzey

Dr. Edward E. Jones (now at Duke University)

Dr. Duncan Luce (formerly of MIT, now at Columbia)

Mr. Nathan Kogan

Mr. Josiah Macy, Jr. (MIT)

Miss Mary Roseborough

Mr. Robert E. Goodnow

Mr. David Clayman

We wish to thank for helpful and generous cooperation and assistance Dr. Frederick Mosteller of Harvard

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[*]Dr. Riecken, one of the principal members of the Project in the past, is now at the University of Minnesota. Many of the studies reported in the following pages benefitted from his aid during their planning.

University; Commander George Sotos and Lieutenant J. M.
Johnson of the Bainbridge Naval Training Station, Maryland;
Commanders Alto Clark and Daniel Harris of the CIC School,
Boston Naval Training Station; and Messrs. E. B. Wilson and
Robert J. Bergeman of the Office of Naval Research, Boston
Branch.

The remainder of the Report summarizes completed
work and work in progress and concludes with a description
of plans for our final year of operation.

II. REVIEW OF THE LITERATURE ON PERCEPTION OF PEOPLE (Bruner
and Tagiuri)

During the past year, a lengthy critical review
of the literature on the perception of people has been
completed and is to appear shortly as a chapter in the
forthcoming Handbook of Social Psychology (3).[*] The review
covers the traditional area of the recognition of emotions,
work on the accurate judgment of personality traits and
classical errors in judgment, and work on the formation of
impressions of another person. Several hundred titles are
covered in the bibliography and the review serves as an
occasion for reassessing older work in the light of modern
interest in social or interpersonal perception.

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[*]Numbers in parentheses refer to the Project
Bibliography at the end of the Report.

III. RELATIONAL ANALYSIS: A METHOD FOR STUDYING INTERPERSONAL PERCEPTION (Tagiuri and Bruner)

Work utilizing Relational Analysis techniques has continued intensively. Some of the features of this procedure have been previously described in several publications (6, 13, 14) and in several technical reports (2, 10, 15, 16) as well as in the First and Second Annual Reports.

Relational Analysis is a technique for studying the perception of feelings of preference. Let us describe the method in terms of a group of individuals in face-to-face contact. We ask each individual to indicate those members of the group with whom he would most like to associate in some kind of activity or, even more simply, to indicate those in the group he "likes most." We could, if we chose to, ask him to indicate those he liked least, those he felt most intellectually stimulated by or sexually aroused by or what-not. The criterion used is quite arbitrary and can vary with the special psychological concern of the investigator. But whatever the criterion used -- as is also the case in sociometry -- the answer obtained will have the property that it is "conscious" or capable of verbalization. We shall be clearer at the outset if we recognize that it will not be possible through the means proposed here to study unconscious or unverbalizable feelings.

The next step in the procedure consists of obtaining from each member of the group the names of those members who, in his opinion, like him best. If we have asked initially, "With whom would you most like to associate?", we now ask the members to indicate "Which members of the group do you think would most like to associate with you?" The second step in the procedure together with the first step makes it possible to determine the accuracy of individuals in recognizing those who like them, or feel stimulated by them, and so on. It also permits one to study the characteristic errors present in assessing how others feel toward one. Some of these systematic judgmental tendencies have been described and analyzed by Tagiuri, Blake, and Bruner (14, 16).

Thus far we have considered only the manner in which people perceive feelings directed toward themselves. One may readily go beyond it and investigate the perception of feelings existing between others by asking each member of the group to put himself in the shoes of each other member in turn and to attempt to guess whom that other member chooses as his favorite associates. This additional information puts us in a position to study the extent to which each member is accurate or in what manner distorted in his perception of the choices made by others. Not only do we

know whether a given person is accurate in recognizing how
others feel toward him but also whether he is accurate in
perceiving how others feel toward each other.

A final step is now possible. Again we ask each
member of the group to put himself in the shoes of his fel-
low members, this time requesting that he indicate by whom
each other person feels chosen. By this means we are en-
abled to estimate accuracy and distortion in a person's
ability to sense who people feel liked by or rejected by.

To recapitulate briefly, the following four kinds
of information are obtained from each member of a face-to-
face group:

1. Whom they choose.

2. By whom they feel chosen.

3. Whom they think others choose.

4. By whom they think others feel chosen.

The four kinds of data thus obtained provide the opportunity
for assessing the accuracy or distortion of interpersonal
perception. That is, one may check whether a subject S_1 is
"correct" in perceiving that another subject S_j chooses him
by referring to S_j's actual choices. Similarly, we may
check whether S_1 is correct in stating whom other members
of the group choose by checking on actual choices made. And

finally, it is possible to check whether S_i is correct in thinking that S_j feels chosen by certain members of the group by consulting directly what S_j says in answer to the question, "By whom do you feel chosen?"

From the four kinds of data obtained through the use of the four questions set forth in the previous paragraph, it is possible to derive several other variables relevant to the study of perception of feelings in the interpersonal situation (1, 2, 16).

Various features of Relational Analysis are discussed below. Some are technical in nature, having to do with the mathematical properties of the technique. Others are substantive and relate to problems we have attacked by means of the method.

A. A statistical model for Relational Analysis (Luce, Macy, and Tagiuri)

A technical report with the above title has been completed and was filed with the ONR in 1953 (10). The problem attacked in this paper is that for certain purposes the data of Relational Analysis must be compared to some level of chance expectancy. Such a model of chance expectancy has many arbitrary features and we selected those that would fit best our conception of chance operation of a group of robots in

the process of choosing each other, and guessing
each other's choices.

Since this work is available in detail, and
will appear in print in the future, we shall not
take up space again here. What we want to note,
however, is that the mathematical solution of this
problem has permitted us to emerge from a virtual
quantitative stalemate that could be relieved only
by a tedious and impractical Monte Carlo approach,
involving the construction of random models "by
hand."

Not only has this solution permitted us ac-
curately and quickly to compute suitable values
against which to evaluate our empirical data, but it
has also helped us to understand better the important
relationship between the values obtained and the size
of the group tested, the number of choices, guesses,
rejections, etc. made by the members.

Apart from its usefulness as a baseline chance
model, it is capable of being modified by introducing
certain empirical conditional probabilities so that
it may serve as a predictive model for reproducing
actual data. By using it as a predictive model we
have been able to locate some of the critical

parameters affecting the distribution of Relational
Analysis data.

B. **Applications of the baseline model** (Tagiuri, Bruner,
and Kogan)

The model referred to in the previous section was
developed to cope with the complex case in which each
subject is permitted to make as many choices and
guesses as he wishes. It can be applied, of course,
to the special and frequent case in which the subjects
are given a fixed number of choices and guesses to
make. The application of the model to this case is
discussed in detail in a progress report already sub-
mitted to the ONR -- "Estimating the chance expectan-
cies of diadic relationships within a group" (15) --
and is available upon request. The summary is repro-
duced here.

"In this paper we discuss the use of a mathe-
matical model for computing the chance frequency and
variance of the forms of diadic relationships obtained
with Relational Analysis procedures. Relational
Analysis defines the diadic relationship existing
between pairs of group members in terms of their
choices, rejections, and perceptions of choice and
rejection. The number of possible combinations of

choice, rejection, perception of choice, and perception of rejection is 45, and 10 when using only choice and perception of choice.

"Evaluation and interpretation of observed diadic frequencies in any group require knowledge of what the chance expectancy would be if the members of the group operated as robots. The mathematical model discussed in the report by Luce, Macy, and Tagiuri (10) provides this necessary baseline.

"Formulae for computing the expected frequency and variance of any diad type are given for the case in which choices, rejections, and their perceptions are all fixed by the experimenter at the same value, d.

"In this case, the expected frequency of any diad with a given number of bonds is a function of the ratio $d/N-1$ where N is the number of members in the group. This property of the expected frequency of diads permits the construction of a nomograph (Fig. 1) with which the frequencies can be quickly calculated without resorting to formulae. A copy of the nomograph suitable for exact work will be sent on request."
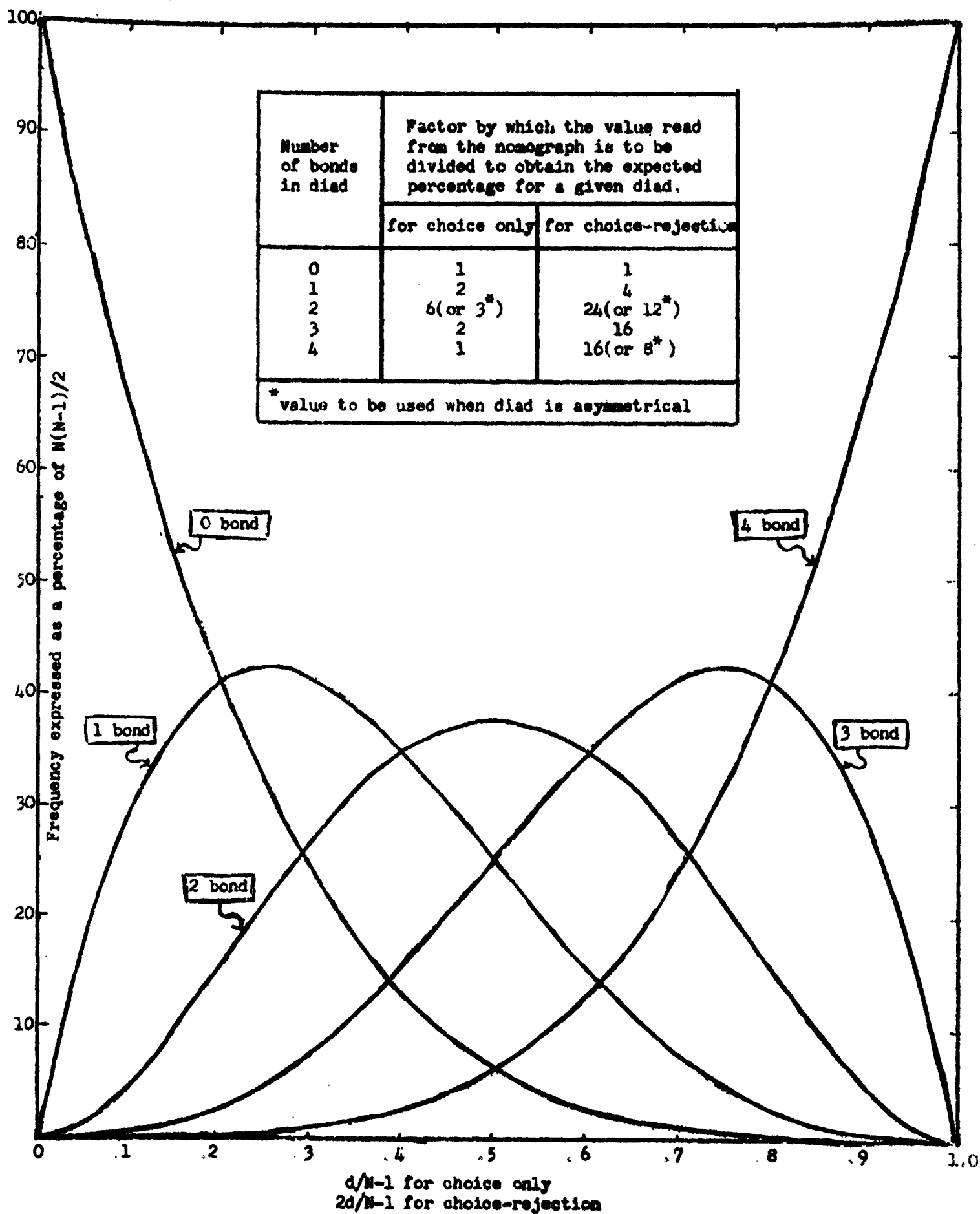
Figure 1. A NOMOGRAPH FOR OBTAINING THE CHANCE EXPECTANCIES OF DIADS (WITH FIXED d)

Work with Relational Analysis methods has progressed
along substantive lines. In last year's Report we gave an
idea of the variety of measurement dimensions that are made
accessible by means of this method. While we have been much
concerned with the formal properties of the method, we have
also investigated its empirical possibilities. Being con-
cerned, as we are, with the problem of interpersonal per-
ception, we naturally focussed upon those aspects of the
procedure that would illuminate this area. The following dis-
cussion of the variables centers around perceptual phenomena
such as accuracy in perceiving feelings and the "transparency"
of the interpersonal feelings of members of a group.

Most of the findings reported below are based on
at least four groups varying in size from eight to twenty-
two members.

C. Studies of accuracy in perception of feelings (Tagiuri
and Bruner)

Four "forms" of accuracy can be distinguished in
Relational Analysis data (4, 16). Briefly, the first
one, which we call self-referent accuracy refers to
how well the individual is able to sense whether
others in the group choose him or not. Self-referent
intuitiveness is a second form of accuracy. It is the

ability to identify who feels chosen by you. These
two forms of accuracy have in common the fact that we
inquire about whether the perceiver knows how he him-
self stands with other members of the group. The
other two forms of accuracy are concerned with how well
members evaluate how other group members feel about
each other. The accuracy of individuals in perceiving
the choices made by others -- choices that do not in-
volve the perceiver directly -- we call interpersonal
accuracy. Finally, interpersonal intuitiveness, the
fourth form of accuracy, is the ability of an indi-
vidual to identify whom other members feel chosen by.

Each of these measures may be computed either in
terms of specific identification or volumetric
estimate. In the former case we determine whether an
individual's perceptions of other members' choices and
guesses are correct with respect to people named. In
the latter, we ask simply whether the perceiver is
correct in specifying the number of choices and guesses,
without regard to specific people named.

With respect to knowing the feelings held by
other members toward them (self-referent accuracy),
subjects seem to exceed chance levels (14). Not only
do they operate well above chance in knowing who

chooses them, but they are, in addition, much better than chance in knowing the specific choices of each of the other members (interpersonal accuracy). However, as might be suspected, self-referent and interpersonal accuracy are not necessarily found with equal strength in the same person, for these two skills are correlated only slightly (16).

While the general level of these two forms of accuracy of social perception is statistically well above chance, not all perceptions are accurate, and it is of interest to inquire into the circumstances leading to error (2, 16).

In the great majority of cases, feeling and perception of feeling are congruent. This is to say, if S_i feels chosen by S_j, in all likelihood S_i has chosen S_j. Thus, we find that choosing a person is very often related to feeling chosen by him. Since this expected reciprocation exceeds the level of actual reciprocation, it can be seen that given this tendency some people are sure to commit errors of perception if they do not happen to be in a relationship where the feelings are mutual. While this is one of the types and sources of errors we find, at the same time, however, if mutual feelings are present, accuracy of perception is

almost insured because of this tendency to have
feeling and perception correspond. Since, when groups
are large enough and well acquainted, individuals pair
up so that mutuality of feelings is quite frequent, the
effects produced by this strong tendency is not a
source of frequent errors, but, rather, it insures
accuracy. In fact, one might argue that the tendency
to like and feel liked, or dislike and feel disliked,
is the result of a life long experience with relation-
ships ripening into mutuality of feelings. The ten-
dency to "see" reciprocation in excess of its actual
incidence causes, naturally enough, errors in the
sense that positive choices made by unchosen persons
are very seldom perceived.

It is natural to ask next whether some process
analogous to congruency error might not also be re-
sponsible for errors in perceiving how others feel
toward each other. The data indicate that subjects
conceive of choices made by other members as being
reciprocated, again more often than reciprocations
exist in fact in the group. Consequently, here too,
this tendency can be a source of error. The over-
evaluation of reciprocity, however, does not inter-
fere as much with interpersonal accuracy as with

self-referent accuracy.

Another source of error in interpersonal perception is that subjects tend to perceive the people they themselves choose as chosen by others as well. That is, they overestimate the popularity of the members they choose.

Another potential source of error is that people tend to think that their expressions of feelings are more apparent than they actually are. That is to say, when an individual chooses another person, this individual will with unjustifiably high probability think that the other person knows how he feels toward him.

A paper on the measurement of accuracy in interpersonal perception is in preparation (4). The above paragraphs should serve to give an idea of the material being covered.

D. Comparison between the perception of choice and the perception of rejection (Tagiuri and Clayman)

We have found that a person knows less accurately who rejects him than who chooses him (14). Will this discrepancy in performance appear also when the judgment involves whom others reject and feel rejected by? We have secured a set of data on six summer camp groups of adolescents ranging in age from about thirteen to sixteen years. Three of the groups are boys, the other

three girls. Analysis of these data is in progress and should supply a first answer to the question of interpersonal accuracy posed above as well as providing information on sex differences in respect to perception of positive and negative feelings. We will also be enabled to check whether the various judgmental phenomena reported above also hold for perception of rejection.

E. Transparency of members' choices (Tagiuri and Kogan)

Relational Analysis data permit ordering the members of a group in terms of the accuracy with which others can tell whom they choose. We have identified some of the factors involved in this rather important characteristic of a group member.

We have found that mutual choices are the most transparent. In short, members most enmeshed in mutual diads tend to be most transparent. Reciprocated choices provide the perceiver with a double set of cues due to the mutuality of feelings and the resultant interaction of diad members.

There is also a strong positive relationship between transparency, on the one hand, and popularity and apparent popularity, on the other. Since it is the popular persons who are involved in a large number

of mutual relationships -- the correlation between popularity and reciprocity of choice is very high -- we would necessarily expect the members of a group to be more aware of the choices of popular subjects.

In conclusion, our results suggest that transparency can not be explained directly in terms of popularity or any other individual "personality" factor, as we thought initially, but is dependent upon or mediated by the mutual or non-mutual social interaction in which a subject is engaged. Thus, transparency is essentially a diadic phenomenon.

A paper on this topic is in preparation (5).

IV. <u>PROCESSES</u> <u>INVOLVED</u> <u>IN</u> <u>FORMING</u> <u>IMPRESSIONS</u> <u>OF</u> <u>OTHERS</u>

Our review of the literature on the perception of people has strengthened our conviction, expressed emphatically in previous reports, that it is very important to study the nature of popular conceptions of personality in order to arrive at an understanding of impression formation. This is not to say that this process will be understood entirely in such terms, but merely that the kinds of categories and dimensions used by the layman in structuring his impressions must be taken into account.

We have, in the past, investigated this problem in various ways (cf. past Annual Reports), and the studies

described before are still in progress. Three new studies have been undertaken. The first of these is concerned with the organization and interrelationship of what we shall call trait attributes in the mind of the lay perceiver. When an individual knows "something" specific about a person he also knows "many other things" about this person. Knowledge of a certain trait leads, with varying probability, to inferences about other traits that may be present. It is this property of a trait -- its inference potential -- that the first study deals with. The second study inquires into what kinds of information one seeks and how one goes about obtaining it when attempting to form an impression of another person. The third study explores the effect of the nationality and occupational role of the stimulus person on impression formation.

A. Inference potential of trait attributes (Shapiro and Tagiuri

It is apparent that the hundreds of trait attributes that are applied to a person differ widely in the amount of information they provide about a person. You probably know a great deal more about a person if you know he is "friendly" than if you know he is "neat." As noted, different trait attributes have different predictive power or inference potential. The inference potential of any given trait is also a function of whether it appears singly or in combination with other

traits. We propose to estimate the inference potential
of several common traits when each is supplied singly
and when they are supplied in combination as informa-
tion about a person. In previous research, traits
were often presented as bases for forming impressions
but little was known about their relative values as
sources of information. Understanding this aspect of
the utilization of traits in forming impressions is
necessary for a better evaluation of past and current
research in this area.

By inference potential we shall mean two things:
1. The number of other traits which a subject feels
he can predict from a given trait. 2. The degree of
confidence with which prediction can be made by a
subject from one trait to another.

The subject is first given one and only one trait-
attribute of a person (i.e., that the person is "in-
telligent"). He is then requested to go through a
check list of 60 traits and check those adjectives
that fit the person, those that do not fit the person,
and those on which he does not have enough information
to decide. Confidence ratings are also obtained for
each trait checked.

The procedure is then repeated for a second trait,
also presented singly. The subject is told that this

trait characterizes _another_ person and is asked to go
through the check list again in the same manner as
before. A third trait is presented under the same in-
structions. Finally, in the last step, all three in-
dividual traits are combined _as representative of one_
person and the check list procedure is repeated.

Analysis of data thus obtained permits us to
compare the generating power of traits in isolation
and in a common context. The analysis is not yet far
enough along to draw conclusions.

A second experiment has as its objective to study
the manner in which traits of differing kinds and
amounts of inference potential are combined by sub-
jects in forming impressions. On the basis of the
data obtained by the procedure outlined above, combina-
tions of traits will be selected to meet the following
conditions for a second experiment.

1. Combinations of traits _each of which has_
high inference potential (when given singly) and _each_
of which can be predicted from the other equally well.

2. Combinations of traits each having high
inference potential but such that _each is not pre-_
dictable from the others.

3. Combinations of traits of high and low in-
ference potential, when each can be predicted from

trait characterizes _another_ person and is asked to go through the check list again in the same manner as before. A third trait is presented under the same instructions. Finally, in the last step, all three individual traits are combined _as representative of one person_ and the check list procedure is repeated.

Analysis of data thus obtained permits us to compare the generating power of traits in isolation and in a common context. The analysis is not yet far enough along to draw conclusions.

A second experiment has as its objective to study the manner in which traits of differing kinds and amounts of inference potential are combined by subjects in forming impressions. On the basis of the data obtained by the procedure outlined above, combinations of traits will be selected to meet the following conditions for a second experiment.

1. Combinations of traits _each of which has high inference potential_ (when given singly) and _each of which can be predicted_ from the other equally well.

2. Combinations of traits each having high inference potential but such that _each is not predictable_ from the others.

3. Combinations of traits of high and low inference potential, when each can be predicted from

each other well and when each can not be predicted from each other well.

This experiment is just getting underway at the time of writing.

Whether the same amount of information is presented simultaneously or sequentially may make a difference to the impression formation. In a final variation of the experiment, the same trait attributes used in combination and presented simultaneously in the preceding study will be given singly in sequence with the instruction that the traits being given describe the same person and that the subject is to set down his impression as it grows with each new trait presented.

The list of attributes considered in this work is shown below. It is arranged for convenience in terms of "dimensions." The lists actually presented subjects are arranged alphabetically.

INTELLIGENCE	Intelligent	- -	Unintelligent
	Intellectual	- -	Non-intellectual
	Clever	- -	Awkward
PRACTICALITY	Practical	- -	Impractical
	Efficient	- -	Inefficient
	Imaginative	- -	Unimaginative
ENTERPRISE	Enterprising	- -	Unenterprising
INDEPENDENCE	Independent	- -	Dependent
IMPULSIVITY	Impulsive	- -	Deliberate

ACTIVITY LEVEL	Energetic	- -	Placid
	Active	- -	Indolent
	Enthusiastic	- -	Apathetic
CONSISTENCY OF BEHAVIOR	Responsible	- -	Irresponsible
	Reliable	- -	Unreliable
	Neat	- -	Disorderly
MORAL CHARACTER	Conscientious	- -	
	Sincere	- -	Insincere
	Honest	- -	Dishonest
AGGRESSIVENESS	Aggressive	- -	Submissive
	Boastful	- -	Modest
	Critical	- -	Tolerant
SOCIABILITY	Sociable	- -	Reserved
	Friendly	- -	Hostile
	Warm	- -	Cold
CONSIDERATENESS	Considerate	- -	Inconsiderate
	Sympathetic	- -	Unsympathetic
	Courteous	- -	Discourteous
MOOD	Even-tempered	- -	Irritable
	Cheerful	- -	Sad
	Witty	- -	Humorless

B. The informational sequence in forming an impression
   (Tagiuri and Shapiro)

Most studies on impression formation have pre-
sented information about the stimulus person in a
fixed order. The question now arises as to the pre-
ferred order in which people seek information about a
person when forming an impression of him. Do these
preferred orders reveal a strategy of information
getting and information using in this area?

A variant of the "20-questions" game is used as

the procedure in this study. As is the case in the
conventional quiz game, the subject is told that the
experimenter is thinking of a specific object, in this
case a "person" in a specific role relationship to the
subject. The subject is not to guess the mere identity
of the "person" (the actual material is disguised making
this literally impossible) but rather to form an im-
pression of the "person" utilizing whatever information
he sees fit to inquire about. At the conclusion
of the question-and-answer phase the subject is asked
first to give a free sketch or personality descrip-
tion and then to fill out a check list of trait at-
tributes.

The stimulus "person" is based upon a biographi-
cal sketch of a real person intensively interviewed in
advance and also well known to the experimenters. The
intensive interview was based on questions that had
been asked by subjects in a pre-test of the "20-
questions" method. The stimulus "person" was pre-
sented in three different roles and the individual
who served as the model for the "person" was in-
tensively interviewed by the experimenters on his be-
havior and attitudes while actually filling these
three roles. These roles will be described presently.
Any given subject was given information about the

"person" in only one role -- save at the very end of the interviewing session when an inquiry was carried out along lines to be described below.

The following general hypotheses are being tested:

1. The attributes selected in the process of "categorizing" a person and the order in which they are utilized are functions of the (imaginary) role-relationship between the subject and the "person." The definition of role-relationship includes specifications of the sex and age of the participants and the presumed nature of the interpersonal situation.

2. Within the limits imposed by the specific role-relationship, the particular utilization and order of attributes are a function of the personality and the history of the subject and of the stimulus "person."

In order to insure uniformity of information given to subjects, a manual was prepared for guiding answers to questions asked. Certain forms of difficulty were also handled in the manual. For example, if the subject asked a question which could not be answered simply, e.g., "What is his Weltanschauung?", Experimenter replied, "Do you think you could ask this question more specifically so that I can give

you a definite answer?" When questioned about a dimen-
sional attribute such as intelligence the experimenter
is instructed to reply first in relative terms and then
with a concrete example. It was our intention to
maintain as much "color" in what otherwise might be a
dull biography made grey by the presentation of factual,
historical material.

After the subject had completed both free sketch
and check list, the experimenter proceeded to the in-
quiry phase. A list of specific questions was used in
the inquiry. For each question and answer unit, the
subject was instructed to state why he asked the
question (what he had in mind) and what he learned from
the information he received in the answer. Other in-
quiries were made with the purpose of eliciting indi-
rectly data related to the sequential utilization of
information, strategies, and the correspondence of the
method to real-life impression formation. At the con-
clusion of the interview the experimenter also followed
up any hunches he might have developed about the sub-
ject's behavior.

Each interview was recorded and transcribed in
order to enable several judges to do qualitative
analyses.

Twenty interviews have been completed and a

detailed analysis of the verbatim records is proceeding.
The three alternative roles in which the stimulus per-
son was presented are: (a) superior -- "tutor in your
house next year" (b) peer -- "member of your house
next year" (c) subordinate -- "incoming freshman you
will be advising next year."

While it is still too early to present results or
to describe fully the methods that will finally be used
in data analysis, some indication of methods and general
findings can be given.

First as to methods, techniques for analyzing
questions asked by subjects are being worked out. In-
dividual questions can be coded in terms of (a) content
asked for, (b) the kind of terminology employed, or
(c) certain formal properties of the questions (e.g.,
subjective vs. behavioral orientation, general vs.
specific, etc.). In addition the sequential ordering
of questions is being studied. Two categories of or-
dering seem already to be apparent. The first is a
form of "focussing" -- beginning with certain general
information and narrowing down the scope of succeeding
questions on the basis of previous information obtained.
The second is a more saccadic approach: an effort to
get successive glimpses or samples of the person's be-
havior in order to get material of a sort that might

fit together. Other forms of sequential strategy will
doubtless emerge from our examination of the data.
Finally, methods are being worked out for analyzing
free sketches and check list responses made by subjects.
Work on the study mentioned in the preceding section
will be of use to us here since the same check lists
are being used.

Several general observations about the behavior of
subjects are of interest. First, subjects found the
task a natural one, one which they reported corresponds
to what they have experienced in everyday life. Sub-
jects did report, however, that they may be going about
the task of gathering information more systematically
by virtue of being "in an experiment" with specialized
conditions. It is also apparent that as the subject
proceeds, it becomes increasingly difficult for him to
find additional, useful questions to ask. There appear
to be two reasons for this: (a) As an impression be-
gins to take form, few "new" questions can be thought
of, the subjects stating that further questions "will
be of little help." (b) There appears to be a certain
battery of questions one asks about another person in a
certain role, fairly limited in number, and after the
person gets through this battery, he has difficulty
formulating more questions.

Finally, subjects appear to operate in somewhat the same way as a caricaturist -- seeking some vivid or idiosyncratic feature of the person around which to form their impression. It happened that our stimulus person is a well-rounded, average person with few idiosyncratic handles, and this appeared to be a source of some difficulty and even frustration to our subjects.

C. Impressions of personality as affected by socially defined role and national identification (Perlmutter and Bruner)

The Project has cooperated with the Center for International Studies, a group financed by the Ford Foundation at M. I. T., on a study of the manner in which impressions of people are affected by the nationality and social role of the stimulus person.

A study undertaken sought to explore (1) some of the bases of impressions of a stimulus person when his nationality is known to be either American, French or German and his vocation is known to be either a businessman or a college professor, (2) some of the effects on impressions of this stimulus person when he is or is not compared to other people of identical personality description but differing nationality. It is planned to obtain data in the United States, France, and Germany.

Thus far only preliminary data have been collected in this country.

The results as far as they are analyzed point in the following directions: (1) Subjects are more reluctant to use the nationality of a person for forming an impression when this person is of their own nationality and when they are judging only one person at a time. Also subjects use the vocation of the person more readily than his nationality, under these conditions.

(2) When subjects are judging three people who differ only in nationality, the nationality of the stimulus person is reported to be much more important for impression formation than before and a little more important on the average than his vocation in determining specific impressions of him.

Further experimentation will be conducted controlling the differences between the two above situations and relating it to theories of impression making.

D. The role of authoritarianism in the perception and evaluation of a prospective leader (E. E. Jones)

An extensive study on this subject, reported in considerable detail in last year's Annual Report, is now entirely completed. Copies are on file at the Office of Naval Research and in the Widener Library of

Harvard University, where the study is filed as a
doctoral dissertation (7). A series of journal arti-
cles based on this research is now in preparation.

V. **PSYCHOLOGICAL FACTORS IN SOCIAL CHOICE**

In previous investigations of the perception of the
characteristics of chosen and rejected fellow members of
groups, two problems have emerged. The first is the degree
to which members of diads match in terms of independently
defined personality characteristics. The second is to what
degree the actual similarity that exists is perceived by
each member of a diad. The following are studies which ex-
plore these problems.

A. **Psychological factors in friendship choice and
rejection** (Shapiro)

The major focus in this investigation is the study
of some psychological correlates of friendship choice
and rejection as obtained by the sociometric method.
Although sociological and adventitious factors may
variously influence the individual's preferences, it is
assumed that if a subculture is made homogeneous enough,
such factors will be minimized leaving personality
factors to play the major role in determining friend-
ship choice and rejection. By using highly homo-
geneous groups we were able to approximate this condi-
tion.

Various theories were reviewed in an attempt to derive a theoretical framework for this research. Two preliminary hypotheses were formulated.

Hypothesis A: Individuals tend to choose as friends those persons who are similar to themselves in the way they describe themselves.

Hypothesis B: The above principle of friendship selection operates to a greater degree and more effectively for those individuals who are relatively high in self esteem.

Exploratory data available from a study already completed are now being reanalyzed. The general design of this investigation involved the use of a small residential group of 19 sorority girls, 19 to 22 years old, and highly homogeneous in socio-economic background. Criteria of friendship choice and rejection were established and measures of several personality characteristics obtained, including self evaluations and evaluations of and by associates in the group.

Standard objective personality and value tests were administered. In addition check lists were employed to provide measures of "Real-Self" and "Ideal-Self." The same check list was used to obtain guesses by each subject of the responses made by his most liked

and most disliked fellow group member. Five socio-
metric questions were administered in order to estab-
lish the criteria of friendship preference. They were
(a) Liking, (b) Friendship Choice, (c) Roommate Choice,
(d) Current Friends, (e) Leisure Time Associates.

A first finding is that with respect to con-
sistency of the five sociometric criterion questions
(i.e., Liking, Friendship Choice, etc.), first and
second choices and first and second rejections yield
consistency among the different criteria, while third
choices or third rejections fail to yield such con-
sistency.

Recall now that each subject fills in a check
list to describe himself. We also asked subjects to
fill in the same check list as they thought their most
liked and most disliked fellow members would fill it
in. Thus, we have a score of actual similarity between
self ratings of members, and a score for the ability
of a subject to guess how another member would fill
in the check list. Finally, we may ask about the de-
gree to which there is a correspondence between a
member's own self-rating and the self rating that he
attributes to another member, be that member his most
liked or disliked associate. The first measure we
shall call **Similarity**, the second **Accuracy**, and the

third Correspondence.

The major hypotheses were generally confirmed, although because of the size of the sample no over-whelming effects were observed. Subjects tended to select similars and reject dissimilars. This did not hold up for third place preferences which, as we have pointed out, were not stable. Subjects who were high in Self Satisfaction (defined by the matching of Subjects' "Real-Self" and "Ideal-Self" descriptions) tended to choose similars and reject dissimilars more consistently than Subjects with low Self Satisfaction, when all choices and rejections are considered.

Additional findings may be summarized as follows: subjects tended to describe those they chose as corresponding more to themselves than those they rejected. Although the accuracy of description is greater for choices than for rejections, this trend was not highly significant. As to the relations between similarity, accuracy, and correspondence, it was found that, in general, where any one is present in a diad, there is a much higher than chance likelihood that all three properties will characterize the diad.

B. **Personality and Sociometric Choice** (Lindzey and Urdan)

The object of this investigation was to discover

some of the personality characteristics of people
varying in sociometric popularity and in their pat-
tern of diad memberships in a group. It was our hope
that by learning more about personality correlates of
choice, we would be in a better position later to
understand the stimulus properties of group members
in work on interpersonal perception.

Some 100 subjects were used, residents of six
college dormitories at Radcliffe College. On each
subject, self ratings, personality test scores, and
projective test measures were obtained. Included in
the battery employed were such measures as the Study
of Values, the Gough Masculinity-Femininity Scale,
the Dominance Subscale of the MMPI, the Maslow
Security-Insecurity Test. On the Sociometric side,
the popularity of subjects in their dormitories was
measured as well as their diadic position in the group.

The principal findings were these. Popularity is
curvilinearly related to several variables, notably
to Dominance and Security. That is, the very high and
the very low in dominance and security are less popular
than those in the middle range.

It is of some interest that objective test measures
show a stronger association with sociometric status
than do either self-ratings or projective measures.

An interesting methodological byproduct of this study is that the effects obtained are washed out when one pools the subjects of the six dormitory groups studied. It appears that between-group variance is considerably in excess of within group variance and that groups rather than individuals provide the critical definition of the sample one uses.

A paper based on this research is in press (9).

VI. **A REVIEW OF SOCIOMETRIC MEASUREMENT AND METHOD** (Lindzey and Borgatta)

A review of the literature on sociometric method and its applications has been completed and filed with the ONR. This work is in press and will appear in the Handbook of Social Psychology (8). The review attempts to outline the ways in which sociometric data can be collected, appropriate methods of analyzing these data, and some of the areas of investigation and application where sociometric measures may be useful. Although certain limitations in sociometric measures and their customary application have been noted, the general impression is that the measures are of substantial value to the investigator concerned with group processes or with the individual in a group setting. Their full significance is likely to be understood only when they are examined against a background of additional psychological and social data on group members and group structure.

VII. PLANS FOR THE COMING YEAR

The coming year will be the last year of operation of the Project. This fact dictates the pattern of work being planned. Three general lines of work are foreseen.

A. Completion of research now in progress

Several studies reported in preceding sections are still in the stage of data-gathering or analysis. These will be completed and prepared for publication. Other work has recently been completed and is being prepared in the form of reports or of articles. Completion of work in progress and of writing will take a considerable part of the Project's time during the coming year.

B. Supplementary studies

There are several points in our research where interpretation of findings requires that additional information be gathered. We shall attempt to limit new research to such studies in the coming year.

C. Preparation of a monograph on Relational Analysis

A major part of the effort of the Project has gone into the development and assessment of Relational Analysis (see Part III of the present Report). A monograph, drawing together all of the relevant material in this subject, is to be prepared during the coming year.

VIII. LIST OF PUBLICATIONS AND REPORTS

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   March 1, 1953, mimeographed.

2. Bruner, J. S. On social perception. Paper read at
   the Seminar of the Office of Naval Research,
   January 1954.

3. Bruner, J. S. & Tagiuri, R. In G. Lindzey (Ed.),
   Handbook of Social Psychology, in press.

4. Bruner, J. S. & Tagiuri, R. Accuracy in perceiving
   interpersonal feelings. Report in preparation.

5. Bruner, J. S., Tagiuri, R., & Kogan, N. Transparency
   of interpersonal feelings. Report in preparation.

6. Goodnow, R. E. & Tagiuri, R. Religious ethnocentrism
   and its recognition among adolescent boys. J.
   abnorm. soc. Psychol., 1952, 47, 316-320.

7. Jones, E. E. The role of authoritarianism in the
   perception and evaluation of a prospective leader.
   Unpublished doctoral dissertation, Harvard
   University, 1953.

8. Lindzey, G. & Borgatta, F. E. Sociometric measurement.
   In G. Lindzey (Ed.), Handbook of Social Psychology,
   in press.

9. Lindzey, G. & Urdan, J. Personality and social
    choice. _Sociometry_, in press.

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    model for relational analysis. Laboratory of
    Social Relations, Harvard University, 1953,
    mimeographed.

11. Maher, H. Personality adjustment and social adjust-
    ment. Unpublished Honors thesis, Harvard
    University, Jan. 1952.

12. Och, M. Estimation of group opinion and its cor-
    relates in sociometric status. Unpublished
    Honors thesis, Harvard University, 1953.

13. Tagiuri, R. Relational analysis: An extension of
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15. Tagiuri, R., Bruner, J. S., & Kogan, N. Estimating
    the chance expectancies of diadic relationships
    within a group. Laboratory of Social Relations,
    Harvard University, 1954, mimeographed.

16. Tagiuri, R., Bruner, J. S., & Kogan, N. Relational
    Analysis: an approach to the study of inter-
    personal perception. Report in preparation.